

Amendments to and listing of the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A switching power supply comprising:
 - at least one switching section which repeats ON/OFF operation to convert an input voltage to an AC voltage;
 - a transformer having a primary winding, to which the AC voltage obtained by the conversion performed by said switching section is applied, and a secondary winding;
 - a synchronous rectifier section for rectifying a voltage induced in the secondary winding of said transformer by switching operation;
 - a smoothing section for smoothing the voltage rectified by said synchronous rectifier section to form an output voltage;
 - a PWM control circuit which forms a PWM signal for controlling said output voltage to determine an ON/OFF ratio of said switching section; and
 - a drive transformer which stores energy necessary for the switching operation of said synchronous rectifier section to ON/OFF-drive said synchronous rectifier section according to said PWM signal.

2. (Original) A switching power supply comprising:
 - at least one switching section which repeats ON/OFF operation to convert an input voltage to an AC voltage;
 - a transformer having a primary winding, to which the AC voltage obtained by the conversion performed by said switching section is applied, and a secondary winding;
 - a synchronous rectifier section for rectifying the voltage induced in the secondary winding of said transformer by switching operation;
 - a smoothing section for smoothing the voltage rectified by said synchronous rectifier section to form an output voltage;
 - a PWM control circuit which forms a PWM signal for controlling said output voltage to determine an ON/OFF ratio of said switching section;
 - an auxiliary power supply for use in driving said synchronous rectifier section;
 - a first drive switch and a second drive switch which are connected in series to form a first series circuit, said first series circuit being connected to an output of said auxiliary

power supply;

a drive transformer which has a primary winding and a secondary winding, stores energy for driving said synchronous rectifier section, and is connected so that a drive current of said synchronous rectifier section flows through said secondary winding;

a first capacitor which is connected in series with the primary winding of said drive transformer so that a second series circuit is formed, said second series circuit being connected across said second drive switch to eliminate a DC voltage to be applied to said drive transformer; and

a drive control circuit which makes said first drive switch and said second drive switch perform ON/OFF operation alternately in synchronism with said PWM signal and applies a positive/negative voltage by alternation to the primary winding of said drive transformer to store said exciting energy, and ON/OFF-drives said synchronous rectifier section by said exciting energy stored in the period during which said first drive switch and said second drive switch are simultaneously OFF.

3. (Original) A switching power supply in accordance with claim 1 having a drive transformer control circuit which sets a desired OFF period according to the PWM signal and repeats ON/OFF operation alternately, wherein said drive transformer control circuit drives the drive transformer via the capacitor.

4. (Original) A switching power supply in accordance with claim 1, wherein the synchronous rectifier section is connected via a capacitor to the primary side of the drive transformer, a drive transformer control circuit is connected via a capacitor to the secondary side of said drive transformer, and said drive transformer is driven by the ON/OFF operation of said drive transformer control circuit.

5. (Original) A switching power supply in accordance with claim 3, wherein the drive transformer control circuit has two switching devices which repeat ON/OFF operation alternately, sets a desired OFF period according to the PWM signal, and drives the drive transformer via the capacitor.

6. (Original) A switching power supply comprising:
at least two switching sections which have minuscule stop periods and repeat ON/OFF operation to convert an input voltage to an AC voltage;
a transformer which has a primary winding, to which the AC voltage obtained by the conversion performed by said switching section is applied, and a secondary winding, and stores exciting energy;
a synchronous rectifier section for rectifying a voltage induced in the secondary winding of said transformer by switching operation;
a smoothing section for smoothing the voltage rectified by said synchronous rectifier section to form an output voltage;
a PWM control circuit which forms a PWM signal for controlling said output voltage to determine an ON/OFF ratio of said switching section; and
a drive transformer for ON/OFF-driving said synchronous rectifier section according to said PWM signal or a voltage signal applied to said switching section, wherein the switching operation of said synchronous rectifier section is performed via the drive transformer by the energy stored in said transformer.

7. (Original) A switching power supply in accordance with claim 5, wherein the voltage applied to the switching section is applied to the primary winding of the drive transformer via the capacitor.

8. (Currently Amended) A switching power supply in accordance with ~~any one of claims 1 to 7~~ claim 1, wherein the switching section comprises a bridge-type or push-pull-type converter.

9. (Currently Amended) A switching power supply in accordance with claim 6 ~~or claim 7~~, wherein the PWM control circuit exercises control so that the switching section short-circuits the primary winding of the transformer, and sets the period during which energy necessary for the switching operation of the synchronous rectifier section can be retained in said transformer.